**REMARKS**

Claims 1-30 are pending in the instant application after this amendment adds new claims 27-30. Claims 29 and 30 are amended. No new matter is added. In view of the amendments and the following remarks, Applicants respectfully request reconsideration of the present application.

Applicants note with appreciation the assistance of the Examiner and his supervisor in the Interview on April 23, 2008. No agreement was reached at the Interview.

Claims 1-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent No. 6,055,605 to Sharma (hereinafter referred to as Sharma). Applicants respectfully traverse.

Claim 1 relates to a storage system that includes, *inter alia, a plurality of data storage logical units (LUs)* comprising *a plurality of* physical media, the plurality of LUs being adapted to receive commands, and responsive to the commands to store and recall data. In the storage system of claim 1, *a plurality of ports, each* port being adapted to maintain an LU command queue for each of the LUs.

The Office Action relies on Sharma as disclosure of several of the features of claim 1, but admits that Sharma does not disclose each of multiple ports having multiple command queues servicing a multiplicity of logical units (Office Action; page 3, bottom, to page 4, top). The Office Action asserts that modifying Sharma to arrive at the invention of claim 1 requires mere duplication of parts (Office Action; page 4, top; citing *In Re Harza*). However, Applicants submit that duplicating the ports and logical units in Sharma does not render a system involving *ports having multiple command queues*. The storage system according to claim 1 modifies the typical system identified in the instant specification in which "each logical unit has its own command queue, wherein the data write and read requests, as well as other commands, are

placed" (Specification; page 1, lines 19-21). The system of claim 1 solves the problem identified

in the specification of increasing complexity while providing scalability (Specification; page 2,

lines 16-25), by modifying the typical system in which each port includes a single command

queue for a single LU. The system according to claim 1 produces the new and unexpected result

discussed in the specification at page 4, lines 9-12 of:

> The main advantage of preferred embodiments of the present
> invention lays in the ***parallel handling*** of queues that consumes
> ***very few management resources***, and ***allows full scalability*** with
> respect to the number of ports.

(emphasis provided). Sharma provides no hint or guidance as to implementing such a system,

and in fact teaches away from duplication of the ports and LUs, and the dramatic modification of

the ports to include multiple command queues. Specifically, Sharma states that each port

includes a respective output queue (Sharma; col. 8, lines 18-19). Therefore, Sharma *teaches*

*away* from the modification proposed by the Office Action, and therefore the modification is not

obvious. Applicants therefore request that the rejection be withdrawn and claim be allowed.

In the present invention, there are multiple LUs, and multiple ports maintaining an LU

command queues for each of the plurality of LUs (see figures 1 and 2). Additionally, ***each port*** is

adapted to communicate ***with all of the LUs***, and has ***a command queue for each of the LUs***. It

is respectfully submitted that not only does Sharma not disclose the feature of multiple LUs, but

Sharma also does not disclose ***ports having multiple command queues***, and even more

specifically, each of the multiple ports having an LU command queue for each of the multiple

LUs. Even assuming *arguendo* that Sharma discloses a single port with a single command queue,

duplicating such a system, which is also respectfully not conceded, does not disclose or suggest a

storage system having a plurality of LUs and a plurality of ports, ***each port being adapted to***

*maintain a plurality of LU command queues, each of the plurality of LU command queues*

*corresponding to a respective one of the LUs*.

It is respectfully submitted that duplicating the system in Sharma does not disclose or suggest the feature of claim 1 of a plurality of ports, each port being adapted to maintain a plurality of LU command queues, *each of the plurality of LU command queues corresponding to a respective one of the LUs*. Since the Office Action admits that Sharma only discloses a single data storage logical unit, and since all of the purported ports of Sharma necessarily must correspond to that single logical unit, then there is no disclosure or suggestion in Sharma relating to *any port having multiple command queues*. According to the MPEP:

> To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, *the prior art reference (or references when combined) must teach or suggest all the claim limitations.* The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure.

(MPEP 706.02(j); Contents of a 35 U.S.C. 103 Rejection; citing *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991); emphasis added). Since Sharma does not disclose or suggest any *port having multiple queues*, Sharma does not disclose or suggest all of the features of the instant invention. Additionally, there is no motivation presented to modify Sharma, and therefore for at least this additional reason, the rejection should be withdrawn.

Claims 2-9, 19-21, 23, 25, 27, and 29 depend from claim 1 and are therefore allowable for at least the same reasons as claim 1 is allowable.

Claim 10 includes features similar to those discussed above in regard to claim 1, and therefore for at least the same reasons as claim 1 is allowable, claim 10 is also allowable.

Claims 11-18, 22, 24, 26, 28, and 30 depend from claim 10 and are therefore allowable for at least the same reasons as claim 10 is allowable.

Claim 18 recites a feature similar to that discussed above in regard to claim 9, and therefore claim 18 is allowable for at least the same additional reason as claim 9 is allowable.

Additionally, the Office Action does not address the specific arguments presented in favor of claims 9, 19, and 20. Claim 9 discloses the feature of the physical media comprising the data, and *the port being adapted to track changes of location of the data within the physical media*. The Office Action asserts that element 180 of figure 3, the coherence controller, discloses the feature of this claim. However, without admitting the veracity of the assertion that element 180 tracks data location changes, it is respectfully submitted that this does not disclose or suggest *each port* tracking changes of location of data *within a plurality of physical media*, as claimed. The Office Action asserts that elements 312/322, etc. disclose ports as recited in the claims. Applicant respectfully disagrees (see above), but even assuming *arguendo* that these ports are substantially similar to the ports as claimed, there is no indication in Sharma that these ports track changes of location of data within a plurality of physical media. The Examiner does not respond to this argument as substantially previously submitted, and Applicants therefore respectfully request a proper response to this argument, or alternatively, that for at least this additional reason claim 9 is allowable.

Regarding claims 19 and 20, no citation or support is provided for the rejections, and a mere statement that "[i]t would be apparent to one of ordinary skill in the art ...." Applicants have no basis for responding to this incomplete rejection. As the MPEP states:

> 35 U.S.C. 103 authorizes a rejection where, to meet the claim, it is necessary to modify a single reference or to combine it with one or more other references. After indicating that the rejection is under 35 U.S.C. 103, *the examiner should set forth in the Office action*:

(A) the relevant teachings of the prior art relied upon, preferably *with reference to the relevant column or page number(s) and line number(s) where appropriate*, ....

(MPEP 706.02(j); Contents of a 35 U.S.C. 103 Rejection; emphasis added). Applicants have previously requested proper citations to references disclosing the features of the claims, and have still not received a response. The Examiner apparently argues from inherency or personal knowledge. In either case, Applicants respectfully request a citation to Sharma, or a proper argument for inherency, or alternatively that the rejections be withdrawn.

Applicants also again object to the improper reliance on Official Notice regarding claims 4, 13, and 21-26, and which has now been expanded to form the basis for the rejections of new claims 27-30. Applicants respectfully request a citation in support of each feature rejected based on Official Notice, as required by MPEP 2144.03. As the MPEP states, "[i]n certain circumstances where appropriate, an examiner may take official notice of facts not in the record or rely on 'common knowledge' in making a rejection, however *such rejections should be judiciously applied*". (MPEP 2144.03; emphasis added). MPEP 2144.03 further states:

> Any rejection based on assertions that a fact is well-known or is common knowledge in the art without documentary evidence to support the examiner's conclusion should be *judiciously applied*. Furthermore, as noted by the court in Ahlert, any facts so noticed should be of notorious character and *serve only to "fill in the gaps" in an insubstantial manner which might exist in the evidentiary showing* made by the examiner to support a particular ground for rejection. It is never appropriate to rely solely on common knowledge in the art without evidentiary support in the record as the principal evidence upon which a rejection was based. See Zurko, 258 F.3d at 1386, 59 USPQ2d at 1697; Ahlert, 424 F.2d at 1092, 165 USPQ 421.

(emphasis added). Applicants therefore specifically point out the errors in the Office Action by stating why the noticed fact is not considered to be common knowledge or well-known in the art.

The Examiner improperly relies on personal knowledge, thereby undermining the prosecution process by depriving the Applicant of the opportunity to examine and analyze the references. It is respectfully submitted that there is no proper motivation presented for modifying Sharma, since the mere availability of alternative methodologies does not provide a proper motivation to modify a reference.

Applicants likewise challenge the blanket use of Official Notice with respect to claims 21-26, which deprives the Applicant of the opportunity to review and analyze references being used against the application. Applicants respectfully assert that the recited features are not a proper subject for Official Notice. It is also respectfully submitted that there is no proper motivation presented for modifying Sharma, and the assertion that incorporating such a technology would be time saving and efficient is improper.

In particular claims 25 and 26 recite the feature that a particular physical media of the plurality of physical media changes over time. This subject is not appropriately rejected based on Official Notice. Applicants submit that a time variant set of physical media, in the context of a data storage system using a plurality of ports and a plurality of LUs, is not well-known and not a proper subject of Official Notice. Therefore, for at least this additional reason claims 25 and 26 are allowable.

Additionally, claims 27 and 28 recite the feature each data storage logical unit (LU) is distributed across a plural subset of the plurality of the physical media. Claims 29 and 30 recite the feature that the port converting the received command to the one or more converted commands includes converting a logical block address and a length of a data string included in the received command, and wherein the converting operation performed by the port also determines if the command is one of a read command and a write command. It is respectfully

that these elements are not a proper subject of Official Notice, and there is no proper motivation for modifying Sharma in the manner claimed. Therefore, for at least this additional reason claims 27-30 are allowable.

## CONCLUSION

In view of the remarks set forth above, this application is believed to be in condition for allowance which action is respectfully requested. However, if for any reason the Examiner should consider this application not to be in condition for allowance, the Examiner is respectfully requested to telephone the undersigned attorney at the number listed below prior to issuing a further Action.

Any fee due with this paper may be charged to Deposit Account No. 50-1290.

Respectfully submitted,

/Brian E. Hennessey/

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Brian E. Hennessey
Reg. No. 51,271

**CUSTOMER NUMBER 026304**

Telephone: (212) 940-6311
Fax: (212) 940-8986 or 8987
Docket No.: ASSIA 20.741 (056730-00070)
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